

## REMARKS

Claims 1, and 4-17 are pending. Claim 1 has been amended. Claims 2 and 3 have been cancelled without prejudice. No new matter has been introduced.

Reexamination and reconsideration of the application are respectfully requested.

In addition, please take notice of the accompanying Change of Correspondence Address Notice for Filed Application and effective immediately, change the correspondence address to:

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In the April 9, 2003 Office Action, the Examiner rejected claims 1-2, 4, 15, and 16 under 35 U.S.C. §102(e) as being anticipated by Lin et al. U.S. Patent No. 6,188,578 (hereinafter the Lin reference). The Examiner rejected claims 3, 14, and 17 under 35 U.S.C. §103(a) as being obvious over Lin in view of Funari et al., U.S. Patent No. 4,849,856 (hereinafter the Funari reference). The Examiner rejected claims 6-9 under 35 U.S.C. §103(a) as being obvious over Lin in view of Houle et al., U.S. Patent No. 6,649,381 (hereinafter the Houle reference). The Examiner rejected claims 9-13 under 35 U.S.C. §103(a) as being obvious over Lin in view of Toy et al., U.S. Patent No. 5,931,222 (hereinafter the Toy reference). These rejections are respectfully traversed.

The present invention relates generally to packaging for integrated circuits. More specifically, this invention relates to an integrated heat spreader. The heat spreader is constructed and arranged to be adhesively affixed, with a sealant, to at least a portion of a component, such as a substrate. The heat spreader includes a body portion, a solid continuous lip portion substantially vertically oriented and integrally formed with

the body portion, and a step portion integrally formed with the lip portion where the step portion includes a plurality of cutouts or a plurality of holes or bores therein. As such, adhesion of the heat spreader to the sealant is increased, and failure due to shear stresses at the heat spreader bonding surface is prevented.

**Amended Independent claim 1 recites:**

An integrated heat spreader constructed and arranged to be adhesively affixed, with a sealant, to at least a portion of a component, comprising:

a body portion;

a **solid continuous lip portion** substantially vertically oriented relative to the body portion; and

a step portion adjacent to the lip portion, wherein **the step portion has a plurality of cutouts or a plurality of holes or bores therein.**

In the April 9, 2003 Office Action, the Examiner rejected claims 1-2, 4, 15, and 16 under 35 U.S.C. §102(e) as being anticipated by the Lin reference. The Examiner stated that "Lin discloses (figures 1 and 2) an integrated heat spreader (13) arranged to be adhesively affixed with a sealant (15) to a substrate (11), comprising a rectangular body (131); a lip portion (132) substantially vertically oriented relative to the body portion; and a step portion adjacent to the lip portion (horizontal end portion of the lip portion); and a plurality of cutouts (133) **formed on the lip portion.**" The Applicant is in agreement with the Examiner in that the plurality of cutouts (133) is formed on the lip portion.

The Lin reference does not disclose, teach, or suggest the integrated heat spreader specified in amended claim 1. Unlike the integrated heat spreader specified

in amended claim 1, the Lin reference does not show “a **solid continuous lip portion** substantially vertically oriented relative to the body portion; and a step portion adjacent to the lip portion, wherein **the step portion has a plurality of cutouts or a plurality of holes or bores therein**”.

The Lin reference essentially teaches a **non-continuous lip portion**. The Lin reference states “the heat spreader 13 of lead frame type is mounted on the printed circuit board 11 in such a manner that the supporting leads 132 thereof stand on the printed circuit board 11, and the piece body 131 substantially abuts on the backside of the die 12. (Col. 3, lines 18-22). The Lin reference further states “each supporting lead 132 is spaced from the adjacent one so that a gap 133 is defined between two adjacent supporting leads 132 to allow circuit connection to be directed to the die 13 thereby enabling the transfer of signals to and from the die 12. (Col. 3, lines 26-31).

Therefore, in view of the above discussion, the Lin reference does not show “a **solid continuous lip portion** substantially vertically oriented relative to the body portion; and a step portion adjacent to the lip portion, wherein the step portion has a plurality of cutouts or a plurality of holes or bores therein”. Accordingly, the applicant respectfully submits that amended independent claim 1 distinguishes over the above-cited reference.

Claims 4-17 all depend, directly or indirectly, from amended independent claim 1. Therefore, applicant respectfully submits that claims 4-17 distinguish over the above-cited reference for the same reasons as set forth above with respect to amended independent claim 1.

The Examiner rejected claims 3, 14, and 17 under 35 U.S.C. §103(a) as being

obvious over Lin in view of the Funari reference. Claim 3 has been cancelled by this amendment. For the reasons stated above, amended independent claim 1 distinguishes over the Lin reference. The Funari reference does not make up for the shortcomings of the Lin reference. Specifically, the Funari reference does not show “a solid continuous lip portion substantially vertically oriented relative to the body portion; and a step portion adjacent to the lip portion, wherein the step portion has a plurality of cutouts or a plurality of holes or bores therein” Accordingly, applicant respectfully submits that amended independent claim 1 distinguishes over the above-cited references. Claims 4 and 17 depend directly from amended independent claim 1. Therefore, applicant respectfully submits that claims 14 and 17 distinguish over the above-cited references for the same reasons as set forth above with respect to amended independent claim 1.

The Examiner rejected claims 6-9 under 35 U.S.C. §103(a) as being obvious over Lin in view of the Houle reference. For the reasons stated above, amended independent claim 1 distinguishes over the Lin reference. The Houle reference does not make up for the shortcomings of the Lin reference. Accordingly, applicant respectfully submits that amended independent claim 1 distinguishes over the above-cited references. Claims 6-9 depend directly or indirectly from amended independent claim 1. Therefore, applicant respectfully submits that claims 6-9 distinguish over the above-cited references for the same reasons as set forth above with respect to amended independent claim 1.

The Examiner rejected claims 9-13 under 35 U.S.C. §103(a) as being obvious over Lin in view of the Toy reference. For the reasons stated above, amended

independent claim 1 distinguishes over the Lin reference. The Toy reference does not make up for the shortcomings of the Lin reference. Accordingly, applicant respectfully submits that amended independent claim 1 distinguishes over the above-cited references. Claims 9-13 depend directly or indirectly from amended independent claim 1. Therefore, applicant respectfully submits that claims 9-13 distinguish over the above-cited references for the same reasons as set forth above with respect to amended independent claim 1.

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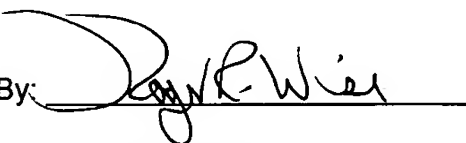
Applicant believes that the foregoing amendment and remarks place the application in condition for allowance, and a favorable action is respectfully requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles telephone number (213) 488-7100 to discuss the steps necessary for placing the application in condition for allowance should the examiner believe that such a telephone conference would advance prosecution of the application.

Respectfully submitted,

PILLSBURY WINTHROP LLP

Date: May 23, 2003

By: 

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## APPENDIX

### **VERSIONS WITH MARKINGS TO SHOW CHANGES MADE.**

#### IN THE CLAIMS:

Please cancel claims 1 and 2 without prejudice, and amend claim 1 as follows:

1. (Amended) An integrated heat spreader constructed and arranged to be adhesively affixed, with a sealant, to at least a portion of a component, comprising:

a body portion;

a solid continuous lip portion substantially vertically oriented relative to the body portion; and

a step portion adjacent to the lip portion, wherein the step portion has a plurality of cutouts or a plurality of holes or bores therein.